Ecuador from July to November of the same year, successfully accomplishing in this time the reconnoissance for the new work.

Unfortunately all the marks left in the old work have been destroyed, even the base monuments having been demolished. According to the plan proposed the Arc of Quito which will replace the Arc of Peru covers 6° of latitude nearly double the length of the old Arc.

Fifty-two triangulation stations will be occupied. Three fundamental astronomical stations have been selected, one near Quito and one at each extremity of the Arc, where latitude and longitude will be determined. Other determinations of latitude will be made at intermediate stations to permit a study of the deviation of the vertical. Three base lines from eight to nine kilometers in length will be measured.

One is situated near Riobamba about the middle of arc and is to be connected with sea level by levels of precision which are expected to determine its elevation with an error not exceeding a few centimeters. Two verification base lines will be measured, one near each end of the Arc. Observation of gravity and magnetism will be made, and studies of topography, geology and other subjects of natural science undertaken. Quito possesses an observatory with modern instruments, in charge of a French astronomer, situated only fourteen minutes of latitude south of the equator, at an elevation of 3,000 meters above sea level.

To execute the measure of the new equatorial arc and complete the complementary studies that should be made in connection with it, it is estimated that five geodesists should devote four years of uninterrupted labor to this work. The difficulties to be overcome will tax the courage and scientific devotion of those upon whom the honor of its execution may be bestowed.

I. W.

SIXTH ANNUAL MEETING OF THE BOTANICAL SOCIETY OF AMERICA.

THE sixth annual meeting of the Botanical Society of America was held in New York City, June 26 to 28, 1900. For the reading of papers the Society met in joint session with Section G of the American Association for the Advancement of Science, June 28th, in Room 502, Schermerhorn Hall, Columbia University. The meeting of Section G was called to order by the Vice-President, Wm. Trelease, who announced the arrangements for the joint session and called B. L. Robinson, president of the Society, to the chair. The retiring president, L. M. Underwood, then read his address—'The Last Quarter: A Reminiscence, and an Outlook.' The full text of the address has already been printed in SCIENCE.

Following is the program of papers presented:

'The Significance of Transpiration': C. R. BARNES.

'Relationship and Variability of the Adirondack Spruce': CHAS. PECK.

'Nuclear Studies on Pellia': B. M. DAVIS.

'On the Structure of the Stem of *Polytrichadelphus dendroides*': MRS. E. G. BRINTON.

'Observations on the group Yuccæ': WM. TRELEASE.

'Spermatogenesis in the Gymnosperms': J. M. COULTER.

'The Pollen Tube, and Division of the Generative Cell, in Pines,' by invitation of the Council: MISS M. C. FERGUSON.

'On the Homologies and Probable Origin of the Embryo-Sac': GEO. F. ATKINSON.

'Observations on Leisonia': CONWAY MACMILLAN.

'Thigmotropism of Roots': F. C. NEWCOMBE.

'Starch in Guard Cells': B. D. HALSTED.

'Coenogametes': B. M. DAVIS.

'The Development of the Archegonium, and Fertilization in the Hemlock Spruce,' by invitation of the Council: W. A. MURRILL.

'The Causes Operative in the Formation of Silage,' by invitation of the Council: H. L. RUSSELL and S. M. BABCOCK.

'A Closed Circuit Respiration Apparatus,' by invitation of the Council: H. L. RUSSELL and S. M. BABCOCK.

The officers for the ensuing year are: *President*, B. D. Halsted; *Vice-President*, R. A. Harper; *Treasurer*, C. A. Hollick; *Secretary*, G. F. Atkinson. *Members of the Council*; B. D. Halsted, B. L. Robinson, R. A. Harper, C. A. Hollick, G. F. Atkinson, C. E. Bessey, F. V. Coville.

An important step was taken by the Society in appointing a committee to consider the best means of realizing the purposes of the Society, 'in the advancement of botanical knowledge,' as defined in the constitution. Among other things this committee will consider the uses to which the accumulating funds of the Society may be put. The committee will report at the next annual meeting of the Society.

GEO. F. ATKINSON,
Secretary.

SCIENTIFIC BOOKS.

PUBLICATIONS OF THE EARTHQUAKE INVESTIGATION COMMITTEE—IN FOREIGN LANGUAGES, NUMBERS 3 AND 4 TOKYO—1900.

THERE is one science which the Japanese have practically made their own. Blessed or cursed (according to how you look at it), by the frequent occurrence of earthquakes, and blessed (certainly) by the presence of a large number of able and enthusiastic students of physical science, Japan has become within twenty years a vast seismological laboratory in which seismic phenomena are being studied as they never were before. Indeed, modern seismology had its birth there, and there it has been and is being most carefully nurtured. About twenty years ago there were in Japan a considerable number of foreigners employed as professors of engineering, geology, physics, etc., and of necessity they became interested in the one characteristic natural phenomenon, the unpleasantly frequent manifestations of which none of them will ever forget.

In the observational study of earthquakes one of them, Professor John Milne, F.R.S., now residing on the Isle of Wight, then Professor of Geology in the School of Engineering, exhibited a zeal and enthusiasm together with untiring patience and fertility of resource beyond all others, and mostly through his efforts the 'Seismological Society of Japan' was organized. In its organization and maintenance the foreign professors received the hearty cooperation of the Japanese officials in the University and out of it. For several years the society issued annual volumes of Proceedings, the great value of which has been everywhere recognized. The gradual and finally almost complete withdrawal of foreigners from the educational work of the country resulted at last in the suspension of the active work of the society, but happily this did not occur before the Japanese had come to realize fully the importance of the work it had done, and, indeed, not until a number of their own young men had been fully trained to carry that work on.

In 1891 official interest in seismology took definite form in the passage of a vote by the Chamber of Peers or House of Lords, upon the initiative of one of its members Dr. Dairoku Kikuchi, now President of the Imperial University of Japan. By a large majority the Cabinet was urged to appoint an 'Earthquake Investigation Committee,' and on June 25, 1892, an Imperial Ordinance was promulgated establishing such a Commission and naming its members. Its duties were defined in a general way in this Ordinance and the payment to its members of a small annual salary was authorized.

The Committee prepared a very elaborate and comprehensive scheme of work which it has followed pretty closely up to the present. The President is Dr. Kikuchi, and Dr. Omori, of the Faculty of Sciences of the Imperial University, is Secretary. There are nearly thirty members, including professors of pure and applied sciences in the University, engineers, architects, etc.

It has been the wise practice of the Committee to publish its principal proceedings and most important papers in foreign languages and of the two under review No. 3 is mostly in the French language and No. 4 is in English.

One of the principal objects of the Committee is to consider the practical aspects of seismology with a view to a lessening of the loss of life,